

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
 US Department of Commerce
 United States Patent and Trademark
 Office, PCT
 2011 South Clark Place Room
 CP2/5C24
 Arlington, VA 22202
 ETATS-UNIS D'AMERIQUE
 in its capacity as elected Office

| | |
|---|---|
| Date of mailing (day/month/year) 09 July 2001 (09.07.01) | Applicant's or agent's file reference PJF01018WO |
| International application No. PCT/GB00/03646 | Priority date (day/month/year) 25 September 1999 (25.09.99) |
| International filing date (day/month/year) 22 September 2000 (22.09.00) | |
| Applicant GUILD, Kenneth et al | |

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
 24 April 2001 (24.04.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

| | |
|---|---|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35 | Authorized officer Pascal Piriou Telephone No.: (41-22) 338.83.38 |
|---|---|

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

KIDD, Piers, Burgess
10 Fleet Place
Limeburner Lane
London EC4M 7SB
ROYAUME-UNI

| | |
|--|--|
| Date of mailing (day/month/year) 12 April 2002 (12.04.02) | IMPORTANT NOTIFICATION |
| Applicant's or agent's file reference PJF01018WO | |
| International application No. PCT/GB00/03646 | International filing date (day/month/year) 22 September 2000 (22.09.00) |

1. The following indications appeared on record concerning:

☐ the applicant ☐ the inventor ☒ the agent ☐ the common representative

| | | |
|---|-----------------------------------|--------------------|
| Name and Address GILL JENNINGS & EVERY Broadgate House 7 Eldon Street London EC2M 7LH United Kingdom | State of Nationality | State of Residence |
| | Telephone No. +44 20 7377 1377 | |
| | Facsimile No. +44 20 7377 1310 | |
| | Teleprinter No. | |

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person ☐ the name ☐ the address ☐ the nationality ☐ the residence

| | | |
|--|-----------------------------------|--------------------|
| Name and Address KIDD, Piers, Burgess 10 Fleet Place Limeburner Lane London EC4M 7SB United Kingdom | State of Nationality | State of Residence |
| | Telephone No. +44 20 7575 1631 | |
| | Facsimile No. +44 20 7571 8799 | |
| | Teleprinter No. | |

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

| | |
|--|---|
| <input checked="" type="checkbox"/> the receiving Office | <input type="checkbox"/> the designated Offices concerned |
| <input type="checkbox"/> the International Searching Authority | <input checked="" type="checkbox"/> the elected Offices concerned |
| <input type="checkbox"/> the International Preliminary Examining Authority | <input checked="" type="checkbox"/> other: GILL JENNINGS & EVERY |

| | |
|--|--|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35 | Authorized officer Akiko KOYAMA Telephone No.: (41-22) 338.83.38 |
|--|--|

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

KIDD, Piers, Burgess
10 Fleet Place
Limeburner Lane
London EC4M 7SB
ROYAUME-UNI

| | |
|--|--|
| Date of mailing (day/month/year) 12 April 2002 (12.04.02) | IMPORTANT NOTIFICATION |
| Applicant's or agent's file reference PJF01018WO | |
| International application No. PCT/GB00/03646 | International filing date (day/month/year) 22 September 2000 (22.09.00) |

| | | |
|---|--|--|
| 1. The following indications appeared on record concerning: | | |
| <input checked="" type="checkbox"/> the applicant | <input type="checkbox"/> the inventor | <input type="checkbox"/> the agent <input type="checkbox"/> the common representative |
| Name and Address WIVENHOE TECHNOLOGY LIMITED Essex House 42 Church Street Colchester Essex CO3 3HH United Kingdom | State of Nationality GB | State of Residence GB |
| | Telephone No. | |
| | Facsimile No. | |
| | Teleprinter No. | |
| 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning: | | |
| <input checked="" type="checkbox"/> the person | <input type="checkbox"/> the name | <input type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence |
| Name and Address BTG INTERNATIONAL LIMITED 10 Fleet Place Limeburner Lane London EC4M 7SB United Kingdom | State of Nationality GB | State of Residence GB |
| | Telephone No. | |
| | Facsimile No. | |
| | Teleprinter No. | |
| 3. Further observations, if necessary: | | |
| 4. A copy of this notification has been sent to: | | |
| <input checked="" type="checkbox"/> the receiving Office | <input type="checkbox"/> the designated Offices concerned | |
| <input type="checkbox"/> the International Searching Authority | <input checked="" type="checkbox"/> the elected Offices concerned | |
| <input type="checkbox"/> the International Preliminary Examining Authority | <input checked="" type="checkbox"/> other: WIVENHOE TECHNOLOGY LIMITED | |

| | |
|---|------------------------------------|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland | Authorized officer Akiko KOYAMA |
| Facsimile No.: (41-22) 740.14.35 | Telephone No.: (41-22) 338.83.38 |

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|--|---|--|
| Applicant's or agent's file reference PJF01018W0 | FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. | |
| International application No. PCT/GB 00/ 03646 | International filing date (day/month/year) 22/09/2000 | (Earliest) Priority Date (day/month/year) 25/09/1999 |
| Applicant WIVENHOE TECHNOLOGY LIMITED et al. | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

Intel 3 Application No

PCT/GB 00/03646

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04J14/02 H04Q11/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04J H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, PAJ, EPO-Internal, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| X | KAZOVSKY L G ET AL: "STARNET: A MULTI-GIGABIT-PER-SECOND OPTICAL LAN UTILIZING A PASSIVE WDM STAR" JOURNAL OF LIGHTWAVE TECHNOLOGY, IEEE, vol. 11, no. 5/06, May 1993 (1993-05), pages 1009-1027, XP000396729 New York, USA ISSN: 0733-8724 section V.B figure 10 | 1-11 |
| Y | --- | 13-17 |
| | -/-- | |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

15 December 2000

Date of mailing of the international search report

21/12/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Orozco Roura, C

INTERNATIONAL SEARCH REPORT

Int. Classification No.
PCT/GB 00/03646

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| X | SHIEH W ET AL: "A WAVELENGTH-ROUTING NODE USING MULTIFUNCTIONAL SEMICONDUCTOR OPTICAL AMPLIFIERS AND MULTIPLE-PILOT-TONE-CODED SUBCARRIER CONTROL HEADERS" IEEE PHOTONICS TECHNOLOGY LETTERS, vol. 9, no. 9, September 1997 (1997-09), pages 1268-1270, XP000721230 New York, USA ISSN: 1041-1135 page 1269, left-hand column page 1269, last paragraph - page 1270, first paragraph | 12, 18-21 |
| Y | --- | 13-17 |
| A | EP 0 455 108 A (HITACHI LTD) 6 November 1991 (1991-11-06) column 2, line 1 - line 14 --- | 1-21 |
| A | EP 0 523 921 A (NORTHERN TELECOM LTD) 20 January 1993 (1993-01-20) column 1, line 1 - line 26 ----- | 8 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter national publication No

PCT/GB 00/03646

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---------------------|--|--|
| EP 0455108 A | 06-11-1991 | JP 4010722 A US 5483370 A | 14-01-1992 09-01-1996 |
| EP 0523921 A | 20-01-1993 | GB 2257861 A JP 5232407 A US 5317384 A | 20-01-1993 10-09-1993 31-05-1994 |

PATENT COOPERATION TREATY

PCT

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REC'D 28 DEC 2001
WIPO PAT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



| | | |
|--|---|---|
| Applicant's or agent's file reference PJF01018WO | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/GB00/03646 | International filing date (day/month/year) 22/09/2000 | Priority date (day/month/year) 25/09/1999 |
| International Patent Classification (IPC) or national classification and IPC H04J14/02 | | |
| Applicant WIVENHOE TECHNOLOGY LIMITED et al. | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 8 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:
 - I ☒ Basis of the report
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☒ Certain defects in the international application
 - VIII ☒ Certain observations on the international application

| | |
|---|--|
| Date of submission of the demand 24/04/2001 | Date of completion of this report 21.12.2001 |
| Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 | Authorized officer Moser, J Telephone No. +49 89 2399 7528  |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/03646

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-6 as originally filed

Claims, No.:

1-21 as originally filed

Drawings, sheets:

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/03646

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|------|--------|---------------------------|
| Novelty (N) | Yes: | Claims | 2-9, 14-17, 19, 21 |
| | No: | Claims | 1, 10, 11, 12, 13, 18, 20 |
| Inventive step (IS) | Yes: | Claims | |
| | No: | Claims | 1-21 |
| Industrial applicability (IA) | Yes: | Claims | 1-21 |
| | No: | Claims | |

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

- D1: SHIEH W ET AL: 'A WAVELENGTH-ROUTING NODE USING MULTIFUNCTIONAL SEMICONDUCTOR OPTICAL AMPLIFIERS AND MULTIPLE-PILOT-TONE-CODED SUBCARRIER CONTROL HEADERS' IEEE PHOTONICS TECHNOLOGY LETTERS, vol. 9, no. 9, September 1997 (1997-09), pages 1268-1270, XP000721230 New York, USA ISSN: 1041-1135
- D2: KAZOVSKY L G ET AL: 'STARNET: A MULTI-GIGABIT-PER-SECOND OPTICAL LAN UTILIZING A PASSIVE WDM STAR' JOURNAL OF LIGHTWAVE TECHNOLOGY, IEEE, vol. 11, no. 5/06, May 1993 (1993-05), pages 1009-1027, XP000396729 New York, USA ISSN: 0733-8724

- 1.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document):
A method of encoding control information on an optical data signal to be transmitted through an optical network (page 1269, left hand column, lines 22 and 23), comprising operating an optical source to generate a substantially coherent continuous-wave light beam (see laser diode LD generating a laser beam at 1571 nm in figure 2), amplitude-modulating the light beam with a data stream to produce an optical data signal (page 1269, left hand column, lines 21 and 22), and also modulating the data signal with control information, using a substantially constant amplitude modulation technique (the laser beam is frequency modulated with frequencies f_1 , f_2 and f_3 in order to encode control information, page 1269, left hand column, lines 26 to 28).
Thus, all features of present claim 1 are disclosed in document D1. Claim 1 does therefore not meet the requirements of Article 33(2) PCT.

Furthermore, even if the Applicant were to argue that on the basis of some minor amendments the claim was novel over the disclosure of document D1, it is clear that the claim is not inventive, contrary to Article 33(3) PCT.

- 1.2 Furthermore, dependent claims 2 to 9 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, involve an inventive step for the reason that the subject-matter of said claims is directly derivable from the disclosure of document D2 (see for claims 2 to 4 page 1014, right hand column, paragraph B "*Combined Modulation*"), or represents simple design details which are generally known to the person skilled in the field of optical telecommunication systems.
- 2.1 Independent claim 10 corresponds to claim 1 in terms of method features. It is therefore not considered to meet the requirements of Article 33(2) PCT for the same reasons given in respect of claim 1 in paragraph 1.1, *mutatis mutandis*.
- 2.2 The subject-matter of dependent claim 11 is known from document D1 (laser diode LD in figure 2) and therefore not novel (Article 33(2) PCT).
- 3.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 12, and discloses (the references in parentheses applying to this document): A method of modifying control information carried by an optical data signal transmitted through an optical network, comprising the steps of encoding the control information on the optical signal in a non-amplitude varying format so as to be associated with a stream of data (the laser beam is frequency modulated with frequencies f_1 , f_2 and f_3 in order to encode control information, page 1269, left hand column, lines 26 to 28), transmitting the optical signal to a traffic processor (wavelength routing and shifting node in figure 2), reading and decoding the control information and then deciding upon the routing of the stream of data depending upon the decoded information (page 1269, right hand column, lines 1 to 13), and passing the optical data signal through a wavelength converter based on a semiconductor optical amplifier (page 1269, right hand column, lines 8 to 11) thereby simultaneously removing the control information (page 1269, right hand column, last line to page 1270, left hand column, line 2).
- Thus, all features of present claim 12 are disclosed in document D1. Claim 12 does therefore not meet the requirements of Article 33(2) PCT.

Furthermore, even if the Applicant were to argue that on the basis of some minor amendments the claim was novel over the disclosure of document D1, it is clear that the claim is not inventive, contrary to Article 33(3) PCT.

- 3.2 Furthermore, dependent claims 13 to 21 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, involve an inventive step for the reason that the subject-matter of said claims is either directly derivable from the disclosure of document D1 (see for claim 13 page 1270, left hand column, lines 2 to 4, for claims 18 and 20 figure 3 and related passages in the description) or of document D2 (see for claims 14 to 17 page 1014, right hand column, paragraph B "*Combined Modulation*"), or represents simple design details which are generally known to the person skilled in the field of optical telecommunication systems.

Re Item VII

Certain defects in the international application

1. Claims 9 and 21 contain references to the description and the drawings. According to Rule 6.2(a) PCT, claims should not contain such references except where absolutely necessary, which is not the case here.
2. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1 and D2 is not mentioned in the description, nor are these documents identified therein.
3. The independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

Re Item VIII

Certain observations on the international application

1. The application contains 3 independent method claims (claims 1, 12 and 21) of overlapping scope. Thus, the claims as a whole are not clear and concise, and the requirements of Article 6 PCT are not met.

The claims should have been recast to include only the minimum necessary number of independent claims in any one category, Rule 6.1 PCT, with dependent claims as appropriate, Rule 6.4 PCT.

In the present case it is considered appropriate to use only one independent claim in the method category, in addition to the device independent claim.

2. It is clear from the description on pages 1 to 3 that the following features are essential to the definition of the invention:
 - (1) cross-gain modulation in a semi-conductor optical amplifier is used for wavelength conversion (this is stressed in particular on page 2, lines 30 to 34)
 - (2) the optical network is an optical packet-switched network (this is the only type of optical network considered in the description, e.g. page 1, line 13)
 - (3) control information is contained in a header preceding the payload data (see page 3, lines 32 to 35)

Since independent claims 1, 10 and 21 do not contain these features and independent claim 12 does not contain features (2) and (3), they do not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

3. The absence of the above-mentioned features is such that the scope of the independent claims is broader than justified by the description and the drawings (PCT Guidelines III-6.1), which refer exclusively to a packet-switched optical network

containing all features listed in paragraph 1 in order to solve the technical problem posed, other possibilities not being contemplated in the application.

Thus, since the entire contents of the application convey the impression that the function of the claimed methods and device is to be carried out in that particular context (PCT Guidelines III-6.5), the claims should have been reformulated in order to include this particular context.

4. The term "*substantially*" used in claim 1 is vague and unclear and leaves the reader in doubt as to the meaning of the technical features to which it refers, thereby rendering the definition of the subject-matter of said claim unclear (Article 6 PCT).
The term "coherent" in claim 1 is a technical term characterizing a technique used in optical transmission. The use of "substantially" in combination with such a term is unclear, because it is not clear if reference is made to the corresponding technique or not. The same objection holds for the use of "*substantially*" in combination with the technical term "constant amplitude modulation technique".